Date: August 30, 1991

To: Jim Milhoam
Bruce Mallett
Marv Sinkule
Tom Decker
Bill Rankin
Paul Fredrickson
Fred Wright
Christine Banks
Lori Stratton

From: Jim Hufham

Subject: RESPONSE TO THE SURRY TRANSPORTATION EVENT

I want to thank each of you for participating in the Region II response to the Surry Transportation Event. As with most emergencies, it was unexpected and I am sure it impacted your busy schedules.

We are presently assembling a list of the chronological events and lessons that we learned in order to improve our response to transportation accidents. Therefore, I would ppreciate you taking time to review your involvement and providing me by "close of business" on Wednesday - September 4 - your critique items from the response that we can include in the lessons learned. We will also provide you with a draft of the chronological events for your review.

Again, thank you for participation.

cc: Phil Stohr
Doug Collins

UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
101 MARIETTA STREET, N.W.
ATLANTA, GEORGIA 30323

Frdw

SEP 23 1991

Docket Nos. 50-280, 50-281
License Nos. DPR-32, DPR-37

Virginia Electric and Power Company
ATTN: Mr. W. L. Stewart
Senior Vice President - Nuclear
5000 Dominion Boulevard
Glen Allen, VA 23060

Gentlemen:

SUBJECT: NOTICE OF VIOLATION
(NRC INSPECTION REPORT NOS. 50-280/91-28 AND 50-281/91-28)

This refers to the inspection conducted by F. N. Wright of this office on August 27-30, 1991. The inspection included a review of activities authorized for your Surry facility. At the conclusion of the inspection, the findings were discussed with those members of your staff identified in the report.

Areas examined during the inspection are identified in the report. Within these areas, the inspection consisted of selective examinations of procedures and representative records, interviews with personnel, and observation of activities in progress.

Based on the results of this inspection, certain of your activities appeared to be in violation of NRC requirements, as specified in the enclosed Notice of Violation. We are concerned about the violation because of the potential to spread low level radioactive contamination to the environment and personnel while radioactive material is in transit to licensed facilities.

You are required to respond to this letter and should follow the instructions specified in the enclosed Notice when preparing your response. In your response, you should document the specific actions taken and any additional actions you plan to prevent recurrence.

In accordance with 10 CFR 2.790(a), a copy of this letter and its enclosures will be placed in the NRC Public Document Room.

The responses directed by this letter and the enclosed Notice are not subject to the clearance procedures of the Office of Management and Budget as required by the Paperwork Reduction Act of 1980, Pub. L. No. 96.511.

① Release ~~9110081231~~ 3pp

A-16

Should you have any questions concerning this letter, please contact us.

Sincerely,

/s/ P. Stohr

P. Philip Stohr, Director
Division of Radiation Safety
and Safeguards

Enclosures:
1. Notice of Violation
2. NRC Inspection Report

cc w/encls:
E. W. Harrell
Vice President - Nuclear Operations
Virginia Electric & Power Company
5000 Dominion Boulevard
Glen Allen, VA 23060

J. P. O'Hanlon
Vice President - Nuclear Services
Virginia Electric & Power Company
5000 Dominion Boulevard
Glen Allen, VA 23060

M. R. Kansler
Station Manager
Surry Power Station
P. O. Box 315
Surry, VA 23883

M. L. Bowling, Jr., Manager
Nuclear Licensing
Virginia Electric & Power Co.
5000 Dominion Boulevard
Glen Allen, VA 23060

Sherlock Holmes, Chairman
Board of Supervisors of Surry County
Surry County Courthouse
Surry, VA 23683

Dr. W. T. Lough
Virginia State Corporation
Commission
Division of Energy Regulation
P. O. Box 1197
Richmond, VA 23209

cc w/encls: (Cont'd on page 3)

(cc w/encls: cont'd)
Michael W. Maupin
Hunton and Williams
P. O. Box 1535
Richmond, VA 23212

C. M. G. Buttery, M.D., M.P.H.
State Health Commissioner
Office of the Commissioner
Virginia Department of Health
P. O. Box 2448
Richmond, VA 23218

Attorney General
Supreme Court Building
101 North 8th Street
Richmond, VA 23219

Commonwealth of Virginia

ENCLOSURE 1

NOTICE OF VIOLATION

Virginia Electric and Power Company
Surry Power Station

Docket Nos. 50-280, 50-281
License Nos. DPR-32, DPR-37

During an inspection conducted on August 27-30, 1991, a violation of NRC requirements was identified. In accordance with the "General Statement of Policy and Procedure for NRC Enforcement Actions," 10 CFR Part 2, Appendix C (1991), the violation is listed below:

10 CFR 71.5(a) requires a licensee who transports any licensed material outside the confines of his plant or other place of use, or delivers any licensed material for transport, to comply with the applicable requirements of the Department of Transportation regulations presented in 49 CFR Parts 170 through 189 insofar as such regulations relate to the material, marking and labeling of the packages, loading and storage of packages, placarding of the transportation vehicle, monitoring requirements, accident reporting, and shipping papers.

49 CFR 172.200, Subpart C - Shipping Papers, requires that each person who offers a hazardous material for transportation shall describe the hazardous material on the shipping paper in the manner required by the subpart.

49 CFR 172.203(d) requires the description for a shipment of radioactive material to include...(ii) A description of the physical and chemical form.

VEPCO Operational Quality Assurance Program Topical Report - VEP 1-5A describes the licensee's commitments to various Regulatory Guides including Regulatory Guide 1.33, Quality Assurance Requirements (Operation), Revision 2, February 1978.

Regulatory Guide 1.33, Appendix A, 1978, requires written procedures for control of radioactivity (for limiting materials released to the environment and limiting personnel exposure).

Contrary to the above, on August 26, 1991, the licensee failed to have procedures that would ensure that the physical and chemical form of radioactivity present in radioactive material shipment SH-1991-53 was properly determined and specified on the radioactive material shipping papers, as required by 49 CFR 172.203(d), in that, on that date, the licensee delivered a reactor coolant pump motor to a carrier having an estimated 5 to 10 gallons of liquid and specifying the physical and chemical form of the material as solid/oxides when the physical form was a mixture of solids and liquids.

This is a Severity Level IV violation (Supplement IV).

9110020239
ZIP

Pursuant to the provisions of 10 CFR 2.201, Virginia Electric and Power Company is hereby required to submit a written statement or explanation to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, D.C. 20555 with a copy to the Regional Administrator, Region II, and if applicable, a copy to the NRC Resident Inspector, within 30 days of the date of the letter transmitting this Notice of Violation. This reply should be clearly marked as a "Reply to a Notice of Violation" and should include: (1) the reason for the violation, or, if contested, the basis for disputing the violation, (2) the corrective steps that have been taken and the results achieved, (3) the corrective steps that will be taken to avoid further violations, and (4) the date when full compliance will be achieved. If an adequate reply is not received within the time specified in this Notice, an order may be issued to show cause why the license should not be modified, suspended, or revoked, or why such other action as may be proper should not be taken. Where good cause is shown, consideration will be given to extending the response time.

FOR THE NUCLEAR REGULATORY COMMISSION

/Phil Stohr

J. Philip Stohr, Director
Division of Radiation Safety
and Safeguards

Dated at Atlanta, Georgia
this day of 1991

UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
101 MARIETTA STREET, N.W.
ATLANTA, GEORGIA 30323

SEP 23 1991

Report Nos.: 50-280/91-28 and 50-281/91-28

Licensee: Virginia Electric and Power Company
Glen Allen, VA 23060

Docket Nos.: 50-280 and 50-281 License Nos.: DPR-32 and DPR-37

Facility Name: Surry 1 and 2

Inspection Conducted: August 27-30, 1991

Inspector: Fred N Wright 9/16/91
F. N. Wright Date Signed

Approval By: Thomas R Decker 9/16/91
T. R. Decker Date Signed
Radiological Effluents and Chemistry Section
Radiological Protection and Emergency
Preparedness Branch
Division of Radiation Safety and Safeguards

SUMMARY

Scope:

This special inspection of the licensee's program for transportation of radioactive material was made to review the activities associated with a shipment of radioactive material involved in a transportation accident on August 27, 1991, in Norfolk, Virginia.

Results:

One violation was identified for failure to properly identify the physical form of the radioactive material involved in a transportation accident. The inspector determined that the licensee did not have a program that would require persons knowledgeable of the physical characteristics of complex components or articles to assess and specify the physical form of radioactive material presented to the radioactive material transportation staff for shipment.

9110081236

REPORT DETAILS

1. Persons Contacted

Licensee Employees

*M. Bechman, Radioactive Material Control
*W. Benthall, Supervisor, Licensing
*M. Biron, Supervisor Radiological Engineering
*H. Blake, Superintendent, NSS
*W. Cook, Supervisor, Health Physics Operations
*D. Erickson, Superintendent, Radiation Protection
*B. Garbor, Supervisor, Health Physics
*B. Guritney, Superintendent, Maintenance
*M. Haddock, Supervisor, Maintenance
*D. Hart, Supervisor, Quality Assurance
*M. Kansler, Station Manager
*M. Olin, Supervisor, Decontamination Services
*J. Price, Assistant Station Manager
*E. Smith, Manager, Quality Assurance
*W. Thorton, Director Health Physics and Chemistry Services

Other licensee personnel contacted during this inspection included engineers, mechanics, technicians, and administrative personnel.

Nuclear Regulatory Commission

*M. Branch, Senior Resident Inspector

*Attended Exit Interview

2. Transportation Accident Overview

On the morning of August 27, 1991, a contaminated Reactor Coolant Pump Motor (RCPM) and package, being transported on a flatbed trailer from the Surry Power Station to a Westinghouse facility, struck the Jefferson Avenue overpass as the transport vehicle was attempting to enter onto westbound Interstate 64 (I-64) in Newport News, Virginia. The height of the package on the trailer was greater than the clearance of the overpass it entered, causing the package to come in contact with the overpass and fall from the trailer onto the road.

The RCPM had been contaminated with low level radioactive material during its use at the plant and was being transported as Low Specific Activity (LSA) radioactive material. The RCPM was contained in a strong tight container (package) for the transport. The RCPM package was severely damaged and the RCPM was resting on its side in the road, outside it's package. A small amount of radioactive fluids

spilled from the RCPM onto the road surface. The fluid migrated down into the damaged road surface and out to the outside (right) road shoulder. At the shoulder the concrete road surface joined with an asphalt berm. The contaminated fluid reached that joint and traveled along it for a couple of hundred feet, seeping into the fissure as it advanced.

Since the load was oversized and required a permit, the transport vehicle was being escorted by other transport company personnel in vehicles to it's front and rear when the accident occurred at about 09:38 a.m. Both lanes of the east and west roads were blocked for about 3 hours. The east bound lanes were opened about 1:00 p.m. and one lane going west on I-64 was opened for traffic later that afternoon.

Two cranes were moved to the accident site and the motor was lifted from the road and moved onto another trailer for transport back to the Surry site. Since the transport package for the RCPM was destroyed in the accident, the licensee proposed the use of two impermeable Herculon "socks" as strong tight containers for transporting the RCPM back to Surry site. The licensee contacted the Department of Transportation (DOT) about the proposed repackaging plan and was advised that the proposal appeared to be acceptable for meeting the requirements of 49 CFR 173.425(b). On August 28, 1991, the licensee departed the accident scene with the RCPM about 2 a.m. and arrived at the Surry site approximately 4 a.m.

VEPCO volunteered to perform the decontamination of the road and sent considerable equipment as well as numerous personnel to the site to begin the task. Recovery workers included representatives from decontamination, health physics, maintenance, and other Surry staffs. The licensee's personnel began decontamination activities the afternoon of the accident and worked around the clock for about 2 1/2 days until the task was completed in the early hours of August 30, 1991. The Commonwealth of Virginia, Bureau of Radiological Health radiological control personnel released the area as clean (background radiation levels) before sunrise that day. The Commonwealth highway department began repair of the road at sunrise and was able to open all westbound lanes of I-64 later that day. The licensee dispatched sufficient resources and personnel to perform the task effectively and safely.

3. Inspection Findings

a. Requirements

10 CFR 71.5(a) requires a licensee, who transports any licensed material outside the confines of his plant or other place of use, or delivers any licensed material for transport, except where such transport is subject to the regulations of the U.S. Postal Service, to comply with the applicable requirements of the DOT regulations presented in 49 CFR Parts 170 through 189 insofar as such regulations relate to the packaging of byproduct, source, or special nuclear material, marking and labeling of the packages, loading and storage of packages, placarding of the transportation vehicle, monitoring requirements, accident reporting, and shipping papers.

49 CFR 173.425 specifies the transport requirements for LSA radioactive materials. Paragraph (b) of 173.425 specifies the requirements for shipments consigned as exclusive use and Paragraph (b)(1) requires the materials be packaged in strong tight packages so that there will be no leakage of radioactive material under conditions normally incident to transportation.

49 CFR 172.200 specifies the requirements for shipping papers. Paragraph 172.203(d)(ii) requires that the shipment of radioactive material must include a description of the physical and chemical form of the material.

VEPCO Operational Quality Assurance Program Topical Report - VEP 1-5A describes the licensee's commitments to various Regulatory Guides including Regulatory Guide 1.33, Quality Assurance Requirements (Operation), Revision 2, February 1978.

Regulatory Guide 1.33, Appendix A, 1978, requires written procedures for control of radioactivity (for limiting materials released to the environment and limiting personnel exposure).

b. RCPM Description

The RCPM had four major coolers, two air and two oil. All of the coolers used site component cooling water (CCW) as a cooling media. The largest cooling system is the upper bearing oil cooler which cools approximately 175 gallons of oil with a heat exchanger holding approximately 10 gallons of CCW. The remaining coolers hold less than 2 gallons of CCW each.

c. RCPM Replacement

The inspector determined that when the CCW lines were disconnected from the RCPM in the Reactor Building containment and at that time those lines and the fluid from the RCPM where these lines are connected were allowed to drain by gravity. However, those CCW system connecting points on the RCPM were not necessarily low points in it's cooling systems. Therefore, simply disconnecting the CCW lines to the RCPM could not drain its cooling system inventory alone. Additionally, the licensee did not block the influent or effluent CCW ports on the RCPM before shipment. Therefore, in positions other than a normal upright position, remaining CCW fluids could flow by gravity out of the coolers. The motor was disconnected from the pump in April of 1991 and moved to the crane building. The RCPM remained there until it was loaded onto the flat bed trailer for shipment.

d. CCW

The licensee had experienced recent problems with their CCW system in that it had become significantly contaminated with reactor coolant system leakage. The inspector learned that the radioactivity of the CCW system in April 1991, was on the order of 1 E-03 microcuries per milliliter (μCi/ml). A small sample of the radioactive liquid collected at the accident scene was analyzed and indicated approximately 1 E-3 μCi/ml of Cs-137. This analysis agreed closely to the radioactivity measured in the CCW system at the time the RCPM was disconnected from the system, indicating that the spilled water's source was CCW from the upper bearing oil cooler heat exchanger.

e. Package

The inspector determined that the licensee had utilized a steel container that fully enclosed the RCPM and that included gaskets at package joints to prevent any release of radioactivity under conditions normally incident to transport. The steel package built for transporting the RCPM met the requirements of a strong tight package as required by the regulations.

f. Shipping Papers and Physical Assessment

The licensee identified the physical and chemical form of radioactivity on the RCPM shipping papers as solid/oxides. However, when the RCPM turned over onto

I-64 a small amount of liquid, estimated to be from 5 to 10 gallons, drained from the motor to contaminate the roadway indicating that the physical form of the radioactive material was both a liquid and solid.

The radiation protection group responsible for preparing radioactive material for transport was unaware that liquids could be internal to the RCPM. The transportation staff used a written procedure to estimate the radioactivity of the RCPM from a combination of radioactive contamination swipes taken from external surfaces and direct radiation measurements. However, the transportation staff did not have a procedure for preparing the RCPM for shipment nor easy access to the RCPM internals. In interviews with licensee personnel the inspector determined that various members of the health physics staff were not aware of the potential for a RCPM to contain water and oil when presented for shipment and therefore did not request information concerning fluids from knowledgeable sources prior to shipping. As a result, the transportation staff was not aware that the RCPM was a mixture of solid and liquid/oxide form at the time of shipment.

The inspector determined that the licensee did not have a system that would require persons knowledgable of the technical details and conditions of articles presented to the transportation group to assess and determine the physical and chemical form of the radioactive material. Failure to have appropriate controls and procedures to properly determine the physical form of radioactive material in accordance with the requirements of DOT regulations was identified as a violation of the licensee's commitments for having written procedures as specified in the licensee's Topical Report (50-280/91-28-01).

g. Shipper Qualifications

The inspector reviewed the qualifications of the person authorizing the transport of the RCPM involved in the accident and determined that the individual worker was an ANSI qualified health physics technician that had completed the licensee's transportation qualification program and was qualified to authorize the shipment of radioactive materials.

One violation was identified.

4. Exit Meeting

The inspection scope and results were summarized on August 30, 1991, with those persons indicated in Paragraph 1. The inspector described the areas inspected and discussed in detail the inspection results as listed below. Proprietary information is not contained in this report.

Item Number	Description and Reference
50-280/91-28-01	VIO - Failure to develop and implement procedures and controls to properly assess the physical form of radioactive material offered for transportation (Paragraph 3.f).